CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/KRIDL/CEMENT/2014-15

Date: 09.07.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	:	Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
SAMPLE ID	:	CEMENT
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-1989
1	a) Initial Setting Time	IS-4031 (Part -5)	160 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	485 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm
3	Standard Consistency	IS-4031 (Part -4)	25.50 %	-

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SAND/2014-15 : 09.07.2014

TEST REPORT ON FINE AGGREGATES (SAND)
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Date of Testing : 09.07.2014

Material : Sand Total Wt. of Aggregates in gms **2000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	76	3.80	3.80	96.2	90-100
2.36	263	13.15	16.95	83.1	75-100
1.18	498	24.90	41.85	58.2	55-90
600 Micron	421	21.05	62.90	37.1	35-59
300 Micron	516	25.80	88.70	11.3	8-30
150 Micron	158	7.90	96.60	3.4	0

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Job No.: CTCE/BBMP/W.No.07/KRIDL/AGG/2014-15 : 09.07.2014

TEST REPORT ON COARSE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Date of Testing : 09.07.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **25150**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	968	3.85	3.85	96.15	95-100
20	16354	65.03	68.87	31.13	30-70
10	5026	19.98	88.86	11.14	10-35
4.75	2347	9.33	98.19	1.81	0-5

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Job No.: CTCE/BBMP/W.No.07/KRIDL /STEEL/2014-15 21.07.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager,** KRIDL, BBMP, Bangalore.
Name of the Work	:	Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Date of Test	:	21.07.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	10	0.62	515	549	12.85	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/KRIDL /STEEL/2014-15 21.07.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager,** KRIDL, BBMP, Bangalore.
Name of the Work	:	Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Date of Test	:	21.07.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	518	552	13.05	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/KRIDL/CUBE/2014-15

25.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of the work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28^{th} day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	28.07.2014	25.08.2014	8.143	476.8	21.19
2	28.07.2014	25.08.2014	8.215	494.6	21.98
3	28.07.2014	25.08.2014	8.327	513.5	22.82

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15 29.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Date of Testing : 29.07.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **25855**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	972	972	3.8	96.2	95-100
22.4	7468	8440	32.6	67.4	60-80
11.2	5237	13677	52.9	47.1	40-60
4.75	5049	18726	72.4	27.6	25-40
2.36	2672	21398	82.8	17.2	15-30
0.600	2218	23616	91.3	8.7	8-22
0.075	1944	25560	98.9	1.1	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15

29.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Date of Testing : 29.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25655**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	752	752	2.9	97.1	95-100
22.4	6496	7248	28.3	71.7	60-80
11.2	4784	12032	46.9	53.1	40-60
4.75	3672	15704	61.2	38.8	25-40
2.36	3537	19241	75.0	25.0	15-30
0.600	4235	23476	91.5	8.5	8-22
0.075	1894	25370	98.9	1.1	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15

29.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	29.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297	298	
4	Aggregate Impact value = percent fines	22.05	22.45	22.60	
	100* (W_2/W_1)%				22.37

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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29.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	29.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	376	379	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	81	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	298	299	
4	Aggregate Impact value = percent fines	20.74	21.37	21.93	
	100* (W_2/W_1)%				21.35

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Shape.T/2014-15 : 30.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 30.07.2014

Result : Flakiness Index = **11.28%**

Elongation Index = **13.65%**

Result : Combined Flakiness & Elongation index **24.93%**

Comments:

→ Maximum allowable Combined Flakiness & Elongation Index for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Shape.T/2014-15 : 30.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 30.07.2014

Result : Flakiness Index = **11.56%**

Elongation Index = **13.24%**

Result : Combined Flakiness & Elongation index **24.80%**

Comments:

→ Maximum allowable Combined Flakiness & Elongation Index for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AL/2014-15 30.07.2014

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Date of Testing : 30.07.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	21.55	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AL/2014-15 30.07.2014

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Date of Testing : 30.07.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.10	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:

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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC(QB)/2014-15 11.08.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	:	Improvements of roads in Hoodi Muniswamappa Layout in Ward No. 07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	11.08.2014

The results of the tests conducted on the bitumen sample using for Semi Dense Bituminous Concrete.

Sl.No	Description	Test Result	Requirement as per IS 73-2006
1	Penetration at 25^0c, 1/10 mm	94	80 to 100
2	Softening point, ^{0}c	52	Min.40
3	Ductility at 27^0c, cm	100 >	Min. 75
4	Flash Point, ^{0}c	364	Min. 220

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